

INTRODUCTION TO XR: applications and technologies

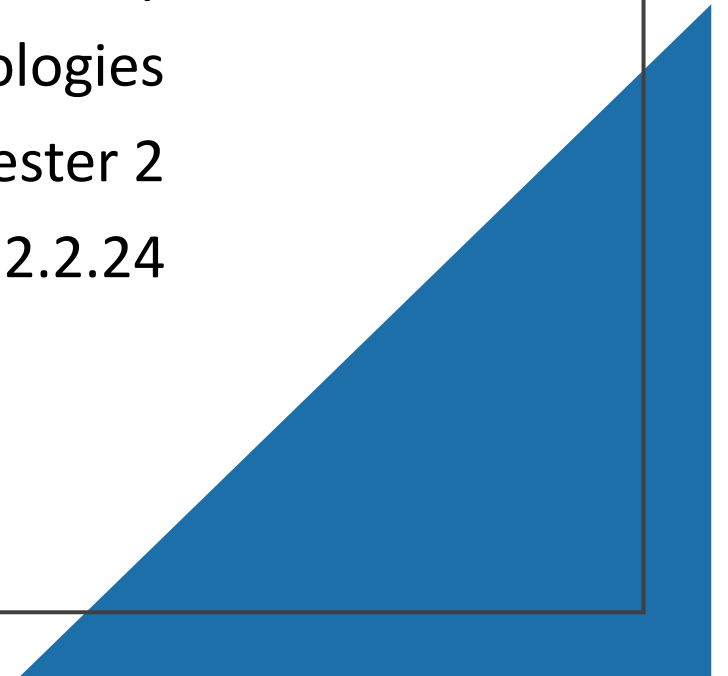
LECTURE 2

Dr. Fionnuala Conway

Music and Media Technologies

Semester 2

2.2.24

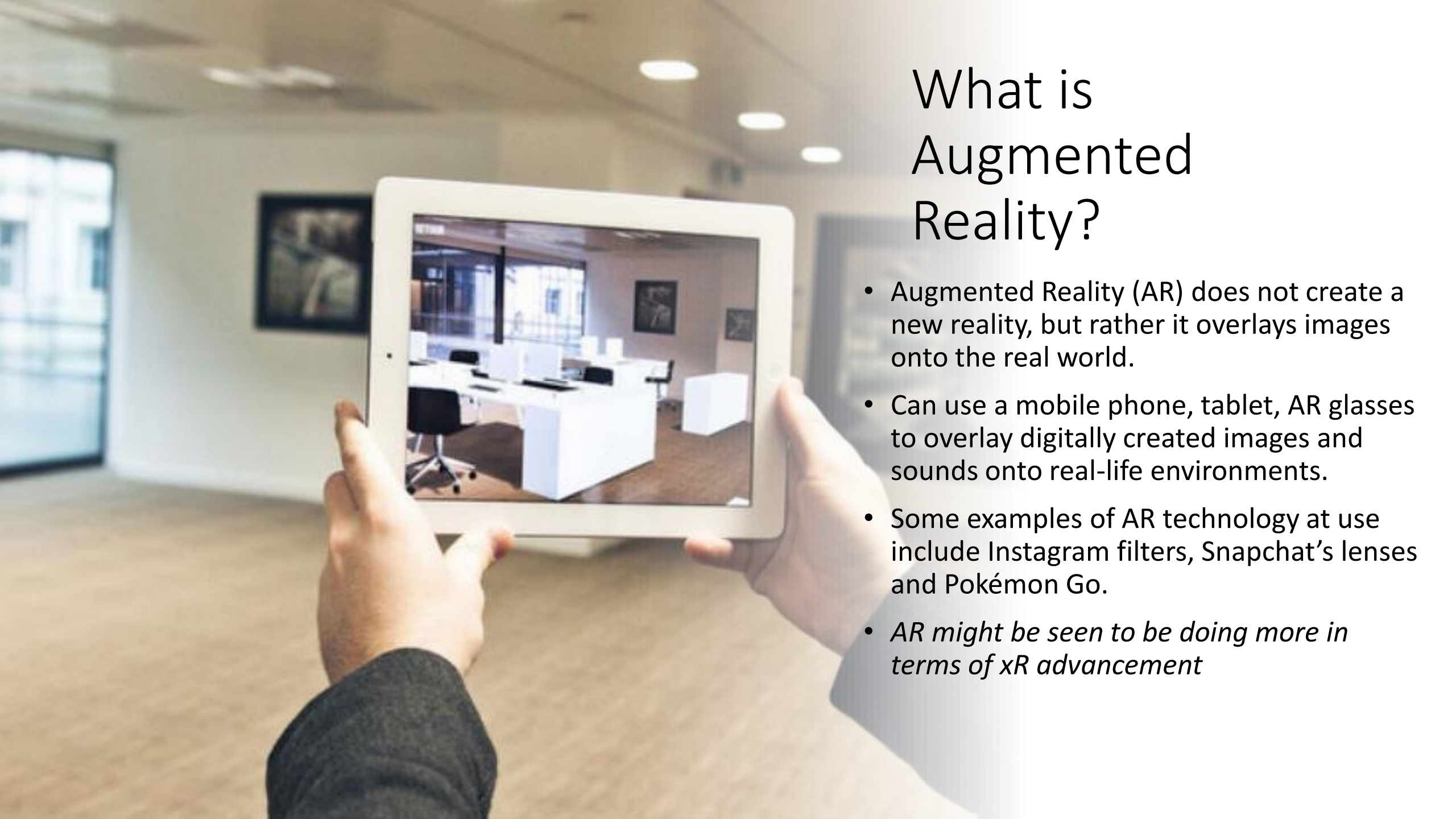


Overview

- Contd from Lecture 1
- Assignment 1 process and overview
- Review and demo of projects
- Introduction to Unity – see handout

What is Augmented Reality?

- Augmented Reality (AR) does not create a new reality, but rather it overlays images onto the real world.
- Can use a mobile phone, tablet, AR glasses to overlay digitally created images and sounds onto real-life environments.
- Some examples of AR technology at use include Instagram filters, Snapchat's lenses and Pokémon Go.
- *AR might be seen to be doing more in terms of xR advancement*



Key Characteristics for AR technology

- Defining Characteristics [Azuma 97]
 - Combines Real and Virtual Images
 - Both can be seen at the same time
 - Interactive in real-time
 - The virtual content can be interacted with
 - Registered in 3D
 - Virtual objects appear fixed in space

*Azuma, R. T. (1997). A survey of augmented reality. Presence, 6(4), 355-385.

Augmented Reality Examples

©2005, How Stuff Works



Locative audio walks,
Tour guide experiences

Examples:

Architectural and technical simulation
Projection mapping

Examples of Augmented Reality

- **Academic, marketing - Interactive posters, using the scan image function to trigger action.**

Augmented Reality Poster - <https://www.youtube.com/watch?v=Aaz6r52RNog>

- **Justinas Kuprys (MMT 2022): Gaming Night Cityscapes project:** <https://vimeo.com/794823552>

Password: MMT2022_Justinas

- **Natasa Paterson and Fionnuala Conway:** Viking Ghost Hunt/Falklands Ghost tour

- <https://www.inderscienceonline.com/doi/abs/10.1504/IJART.2013.050692>

- **Lego Hidden Side (developed by TouchPress (<https://www.touchpress.com/>))**

https://www.youtube.com/watch?time_continue=146&v=pnfRgtmfbuw&feature=emb_logo (Skip to 2 mins 10 secs)

- **Tara Scanlan (MMT 2021) – tree species education –** <https://vimeo.com/672373982> pass:

mmt2021_tara

- **Nina Fern (Microcredential, 2023):** Artistic work and exhibition materials: Rockpool Companion -

<https://vimeo.com/825656143>

Mixed Reality (MR)

Mixed Reality (MR) lies at the intersection of VR and AR. This technology blends real and virtual worlds to create complex environments where physical and digital elements interact in real-time.

- Bloom: Open Space by Brian Eno and Peter Chilvers uses the Microsoft HoloLens

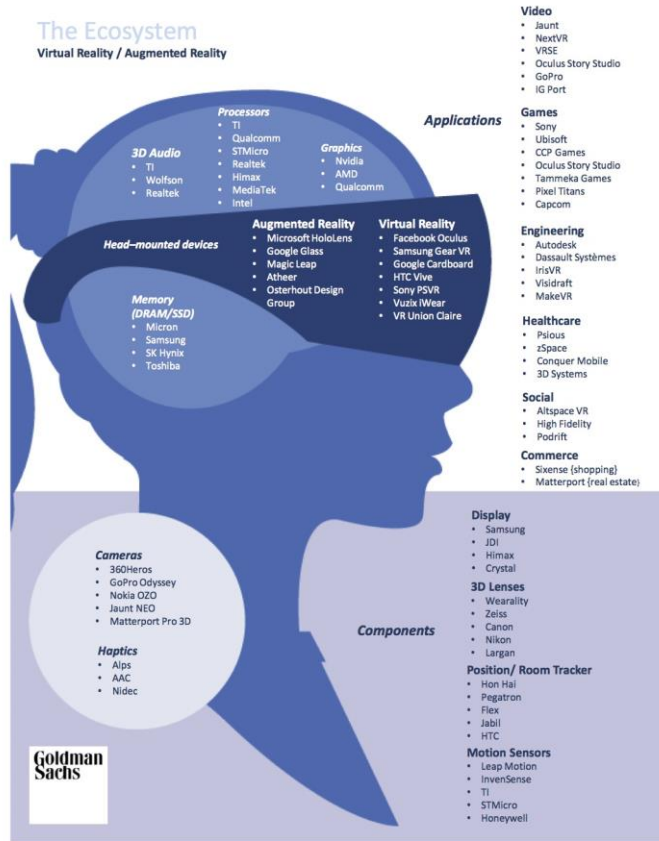
<https://www.wired.co.uk/article/brian-eno-amsterdam-bloom-open-space-installation-reflection>

- https://www.youtube.com/watch?v=vQ_DYWh734 (2"04)
- CNN Hologram TV:
https://www.youtube.com/watch?v=v7fQ_EsMJMs
- Mark Linnane – Data City
<https://marklinnane.net/portfolio/building-city-dashboards/>

Commercial market and VR/AR/xR for Good

January 13, 2016

Americas: Technology



Career paths:

1. Content creation

Applications in: Videogames, live events, education, art and music applications

2. Develop technologies: computer science/engineering route

Homework Goldman Sachs report:

<https://www.goldmansachs.com/insights/pages/technology-driving-innovation-folder/virtual-and-augmented-reality/report.pdf>

Assignment 1 overview: rational for the module progress

- Material is laid out so that you can explore Unity and learn how to create content > build worlds and plan idea, then move to VR project and interaction

*** Walk before you can run***

- Tutorials allow you to begin optimising your world for headset.
- Suitable for beginner: good opportunity to explore ideas, motivation for your idea and world, consider interaction, demo the world and idea to others and identify interesting ideas for interaction in VR (or AR). **Creative focus.**
- Use the First Person Controller (FPC asset) (like POV) to allow users move through your world.
- Distribute the environment as an application (.exe file) so that others can see your ideas.
- Can be elaborate in creative thinking and planning. Bring in developer/upskill in C# to develop the world further.
- Alternative possibility - VR project: more suitable for advanced learner who is comfortable programming interaction. Would recommend Unity's Create with VR – 30 hour course: <https://learn.unity.com/course/create-with-vr>. Uses Unity 2020. 3 to demonstrate.

Sample projects

- Niamh Daly O'Mahony – An Bhaile Uaisle

The following sample files are located in Lecture 2 > resources folder>>>

- Benjamin Boam (2023) – Meditative space – incorporated elements of VR locomotion (teleporting)
- Sofia Harmen (2023) – creative exploration and rich world
- Nicholas Pender (2023) – VR project. Interaction is developed.

>>> Review Assignment 1 brief